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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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12/12/2003

Youichi Ono

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2374

1933

7590

07/05/2006

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EXAMINER

PHAM, HAI CHI

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 07/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/734,894

Applicant(s)

ONO ET AL.

Examiner

Hai C. Pham

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 March 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4, 14-19, 29-34 and 44-57 is/are allowed.
- 6) ☒ Claim(s) 5-9, 20-24 and 35-39 is/are rejected.
- 7) ☒ Claim(s) 10-13, 25-28 and 40-43 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| <p>1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br/>Paper No(s)/Mail Date _____</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)<br/>Paper No(s)/Mail Date. _____</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6) <input type="checkbox"/> Other: _____</p> |
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## FINAL REJECTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 5-7 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goto et al. (Pub. No. U.S. 2003/0091347) in view of Furuya (U.S. 6,297,873).

Goto et al. discloses an image forming apparatus and a method for correcting image density based on the changing characteristic of the heat-developable light-sensitive material and the time-changing characteristic of the exposing device, the apparatus comprising the exposing device (image exposure section 16) for exposing the heat-developable light-sensitive material, a thermal developing device (heat development section 18) for thermally developing and visualizing the latent image, a measuring device (density measuring circuit 256) for measuring an image density of the image on the developed image forming material, a calibration device (density correction calculator 260) for forming a table (conversion table) to define a relation between an image signal and an image density (paragraphs [0160]-[0165]).

However, Goto et al. fails to teach the storing device for storing passage-time film characteristic model data indicating a change over time of a characteristic of the image forming material, the table containing density correction based on the plurality of

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different test image data, the difference calculating device, and the correcting device for correcting the table based on of the density difference calculated by the difference calculating device.

Furuya discloses an image recording apparatus comprising an exposing device (laser printer section 18) for exposing an image forming material (photographic printing paper 62 or 63) so as to form a latent image on the image forming material based on image data, a developing device (processor section 20 carrying out color development) for developing and visualizing the latent image on the exposed image forming material so as to form an image, a measuring device (not shown) for measuring the image density of the image on the developed image forming material (col. 9, lines 44-55), a calibrating device (e.g., calibration control section 80) for forming a table to define a relation between an image signal and an image density thereof based on a plurality of different test image data and the measured image densities (col. 9, line 44 to col. 10, line 15), a storing device (calibration history memory 84) for storing a passage-time film characteristic model data indicating a change with time of a characteristic of the image forming material (the calibration history memory 84 storing reference information, e.g., calibration history information caused by periodic changes due to the four seasons, or the actual information of calibrations 1 and 2 such as densities measured from test pattern formed on the photographic printing paper 62 in different time frames, which reflects the change in characteristics with time) (Fig. 4) (see also col. 13, lines 45-59), and a difference calculating device to calculate a density difference on the basis of the passage-time film characteristic model between the time of forming the table and the

time of forming an image based on image signal of diagnostic image data (computing processing section 88 computes a correction value based on the amount of change in characteristic between the reference information of calibrations 1 and 2, the calibration 3 information so as to correct the amount of exposure) (col. 11, lines 26-47) (Fig. 4), and a correcting device for correcting the table on the basis of the density difference calculated by the difference calculating device (col. 10, lines 24-39).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate into the device of Goto et al. the storage for storing the passage-time film characteristic model data indicating a change over time of a characteristic of the image forming material as well as the means for updating the density correction table as taught by Furuya. The motivation for doing so would have been to provide a real-time image density correction based on the time-changing characteristics of the various components of the printing device.

Goto et al. further teaches:

- (regarding claims 6 and 21) the storing device (conversion table) storing result data obtained by exposing part of the image forming material with a light quantity that corresponds to a predetermined density according to the table at the time of forming a diagnosis image by measuring a density at said part of the image forming material (at the time a new film is used, the conversion table is prepared by exposing the new film based on the data provided by the previously prepared table), and the first controlling device for controlling the exposure section (16) and the developing section (18) so as to offset a characteristic change of the

exposure section and the developing section (paragraph [0164]), a first estimation device (conversion table preparation unit 262) for calculating and keeping a characteristic change of the image forming material based on the stored result data (the conversion table storing a new set of data corresponding to the new image forming material being used), and a second controlling device (exposure controller 252) for controlling the exposing device based on the characteristic change of the image forming material calculated by the first estimation device instead of the stored-passage-time film characteristic model data (e.g., based only on the newly prepared data) (paragraphs [0163]-[0164]).

- (regarding claims 7 and 22) the clearing device for clearing the characteristic change calculated by the first estimation device when the conversion table by the calibrating device and when the second controlling device is operated (the conversion table being updated at the time the invention was made a new image forming material is used so as to control the exposure section 16 during the operation in real-time) (paragraph [0163]-[0164]).

3. Claims 8-9 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goto et al. in view of Furuya, as applied to claims 5-6 and 20-21 above, and further in view of Fukuda et al. (U.S. 6,624,876).

Goto et al., as modified by Furuya, discloses all the basic limitations of the claimed invention except for the first and second controlling devices resume the operation of the image processing when the apparatus has been stopped for a period of

time that is not shorter than a predetermined time, and the first estimation device calculates and keeps the characteristic change of the image forming material every time the image processing apparatus stops for a predetermined time.

Fukuda et al. discloses an image recording apparatus having a calibration operating section (48) for performing a calibration process wherein the densities of the color image printed on the margin of the recording material outside of the image area are measured and compared to the reference densities, the calculated difference of density values are used to determine the correction value for driving the thermal print head (22), the correction value being stored in the correction parameter memory (42d). Fukuda et al. further teaches the calibration process being executed immediately after a predetermined time has elapsed since the power switch is turned on (e.g., after a predetermined time when the printing operation is not performed) (col. 8, lines 16-30).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to set the timing for the printing device of Goto et al. to start the generation and the storage of the calibration information when no printing operation is performed after a predetermined time as taught by Fukuda et al. The motivation for doing so would have been to select the most logic moment in time in the printing operation when there is a possibility that a significant status change of the printer may occur in the printer for such performance to be started.

4. Claims 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goto et al. in view of Furuya and Nakajima et al. (U.S. 6,616,262).

Goto et al. in view of Furuya discloses all the basic limitations of the claimed invention except for the computer program to be executed by a computer to function as an image processor.

However, it is old and well known in the art to use a computer program having program codes to perform tasks specific to desired applications. Nakajima et al., for instance, discloses an image processing apparatus in which a computer program is implemented to be executed by the CPU (or printer controller 22) of the printer (2) to perform the task related to specific image processing that includes receiving reference information calibration such as engine characteristic (211) and calibration data (212) from an external device such as the server PC (1) (Fig. 13) based on which the calibration of the printer can be performed.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the computer program to perform the image processing function in the device of Goto et al. as taught by Nakajima et al. The motivation for doing so would have been to provide the printing system with the advantageous automation of performing the necessary function of calibration that should be carried out at critical timings during the course of printing.

5. Claims 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goto et al. in view of Furuya and Nakajima et al., as applied to claims 35-36 above, and further in view of Fukuda et al.



Goto et al., as modified by Furuya and Nakajima et al., discloses all the basic limitations of the claimed invention except for the first and second controlling devices resume the operation of the image processing when the apparatus has been stopped for a period of time that is not shorter than a predetermined time, and the first estimation device calculates and keeps the characteristic change of the image forming material every time the image processing apparatus stops for a predetermined time.

Fukuda et al. discloses an image recording apparatus having a calibration operating section (48) for performing a calibration process wherein the densities of the color image printed on the margin of the recording material outside of the image area are measured and compared to the reference densities, the calculated difference of density values are used to determine the correction value for driving the thermal print head (22), the correction value being stored in the correction parameter memory (42d). Fukuda et al. further teaches the calibration process being executed immediately after a predetermined time has elapsed since the power switch is turned on (e.g., after a predetermined time when the printing operation is not performed) (col. 8, lines 16-30).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to set the timing for the printing device of Goto et al. to start the generation and the storage of the calibration information when no printing operation is performed after a predetermined time as taught by Fukuda et al. The motivation for doing so would have been to select the most logic moment in time in the printing operation when there is a possibility that a significant status change of the printer may occur in the printer for such performance to be started.

***Allowable Subject Matter***

6. Claims 1-4, 14-19, 29-34 and 44-57 are allowed.
7. Claims 10-13, 25-28 and 40-43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
8. The following is an examiner's statement of reasons for allowance: claims 1, 14, 16, 29, 31 and 44 are patentable over the prior art patents and printed publications because of the specific configuration of the image processing apparatus, which includes a storage device for storing characteristic change model data indicating a characteristic change of the thermal developing device over time based on which a difference calculating device calculates a density difference between an image density at the time the invention was made the table was formed and an image density at a time at which the image is formed based on the image signal corresponding to the diagnostic image data. The combined limitations as currently claimed are not taught by the prior art of record considered alone or in combination.

Claims 2-4, 15, 17-19, 30, 32-34 and 45 are allowable because they are directly or indirectly dependent from claims 1, 14, 16, 29, 31 and 44 above.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

9. Applicant's amendment, which changed the scope of the based claims, necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vip Patel can be reached on (571) 272-2458. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



HAI PHAM  
PRIMARY EXAMINER

June 24, 2006